APPENDIX

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KIOSK

CRIS

GIS

CABLE TV

WEB

IVR

Fairfax County

VIRGINIA

Best Managed County in USA! A- Seal of Good eGovernance

★ Government
■ Performance
■ Project

APPENDIX

FEATURED IN THIS SECTION

FAIRFAX COUNTY IT STANDARDS
(Revised April 2002)

DESKTOP:	
Operating System	Windows 2002
PRODUCTIVITY APPLICATIONS:	
Wordprocessor	Microsoft Word XP
Spreadsheet	Microsoft Excel XP
Presentation	Microsoft PowerPoint 2000
Database	Microsoft Access XP
E-Mail Client	Microsoft Outlook 2000 and Outlook Web Access (latest release)
Project Management	Microsoft Project 2000
Graphics	Visio 2000
SPECIALTY APPLICATIONS:	
Web Browser	Microsoft Internet Explorer (latest release)
Antivirus	Norton AntiVirus (latest release) for Workstations and Servers
Disk Defragmentation	Defragmenation bundled with Windows 2000
X-Windows	Hummingbird Exceed (latest release)
3270 Emulation	IBM PC3270 (Other products under evaluation)
GIS (Centrally administered by DIT)	Arc/Info 8.0.2 ArcView 3.2 ArcExplorer 3.0 Map Objects 2.0 Map Objects Light 1.0 Map Objects Internet Map Server 2.0 Arc Internet Map Server 3.0 ArcSDE 8.0
SERVERS:	
Operating System	Microsoft Windows 2000 Advanced Server AIX (latest release) Solaris (latest release) OS/390 2.10
Application Server	Citrix MetaFrame XP
Hardware	Intel (Windows) IBM p-Series (UNIX) SUN (UNIX) IBM S390 (Mainframe)
Backup	TSM 4.1 OS/390/DFSMS
Security	OS/390 Secure Way Security Server Internal Security (AIX Solaris & Windows 2000Servers) RSA Secure ID Token/ACE Server
E-Mail — Workflow (Centrally administered by DIT)	Microsoft Exchange Server 5.5 Enterprise Edition migrating to Exchange 2000 Lsoft ListServ
Web Application Servers (Centrally administered by DIT)	Microsoft Internet Information Server (latest release) Web.PB (for legacy client/server applications) Active Server Pages (ASP) (latest release)
DATABASES:	Oracle 8 or higher DB2 Release 6 Microsoft SQL Server 7.0 or higher
Communications Protocol	TCP/IP

APPENDIX...Architecture Standards

ACRONYM DEFINITIONS

ALCS	Application Life Cycle Standards
CPU	Central Processing Unit
EOC	Enterprise Operations Center
HBA	Host Bus Adaptor
MHZ	Mega Hertz
MS	Microsoft
UPS	Un-Interruptible Power Supply
WAN	Wide Area Network

PLATFORM ARCHITECTURE STANDARDS:

INTEL FILE & PRINT SERVERS

COMPONENT	MININUM STANDARD
Power	Redundant, UPS required if not EOC-resident
Fault Tolerance/Disk Configuration	Raid 5
CPU's	Dual 866 MHz
Network Interface Cards	Dual Ethernet 100 Base-T
Operating System (Type & Version)	Windows 2000 Advanced Server
Monitor	17" SVGA Color, if non-EOC site Not required if EOC resident
Minimum RAM	1GB Minimum Cache 256MB
Naming Convention(s)	Contact DIT Technical Support Services Branch
File Systems	NTFS
3rd Party Software Requirements	Norton Antivirus, Enterprise Edition MC SMS Client
Preferred Manufacturer	Dell
Maintenance	3 Year, 24/7, 4 hour on-site, parts & labor included
Additional Hardware Requirements	Raid Controller Rack mountable rails if EOC resident Minimum 3 Open Slots to facilitate system expansion HBAs (if connected to SAN)
Pre-Install Option (s)	None
Backup Hardware/Software	TSM Enterprise Backup Solution Veritas Volume Manager (if connected to SAN) Veritas Backup Exec if server connection to EOC does not have acceptable throughput

PLATFORM ARCHITECTURE STANDARDS:
INTEL DATABASE & APPLICATION SERVERS[1]

COMPONENT	MININUM STANDARD
Power	Redundant must include UPS if not EOC resident
Fault Tolerance/Disk Configuration	Operating System Drives — Raid 1 (Mirrored) Database\Application Drives — Raid 5 (utilizing SAN if EOC resident)
CPU's	Dual, 866 MHz
Network Interface Cards	Dual (2) Ethernet 100 Base-T
Operating System (Type & Version)	Windows 2000 Advanced Server
Monitor	17" SVGA Color for non-EOC sites Not required if EOC resident
Minimum RAM	2 GB Minimum Cache — Database/Application specific (i.e., # of users, # of records, business area)
File Systems	NTFS, OFA
3rd Party Software Requirements	Norton AntiVirus, Enterprise Edition
Preferred Manufacturer	Dell
Maintenance	3 Year, 24/7, 4 hour on-site, parts & labor included
Additional Hardware Requirements	Raid Controller Rack mountable rails if EOC resident Minimum 3 Open Slots to facilitate system expansion HBAs
Pre-Install Option (s)	N/A
Storage and Backup Hardware/Software	TSM 4.1 Enterprise Backup Solution client TDP for Oracle or SQLServer Veritas Volume Manager if EOC resident Veritas Backup Exec if server connection to EOC does not have acceptable throughput

[1] Represents MINIMUM Intel Database & Application Server Standards, additional components and/or more robust versions of standard components may be required depending on the business area, application and database the server will support.

PLATFORM ARCHITECTURE STANDARDS:
INTEL APPLICATION SERVERS, GIS

COMPONENT	MININUM STANDARD
Power	Redundant must include UPS if not EOC resident
Fault Tolerance/Disk Configuration	Operating System Drives — Raid 1 (Mirrored) Data and/or Application Drives — Utilize SAN
CPU's	Dual, 866 MHz
Network Interface Cards	Dual Ethernet 100 Base-T
Operating System (Type & Version)	Windows 2000 Advanced Server
Monitor	17" SVGA
Minimum RAM	4 GB Minimum Cache — Database/Application specific (i.e., # of users, # of records, business area)
File Systems	NTFS, OFA
3rd Party Software Requirements	Norton Anti Virus, Enterprise Edition
Preferred Manufacturer	Dell
Maintenance	3 Year, 24/7, 4 hour, parts & labor included
Additional Hardware Requirements	Raid Controller Rack mountable rails if EOC resident Minimum 3 Open Slots to facilitate system expansion HBAs
Pre-Install Option (s)	None
Storage and Backup Hardware/Software	TSM Enterprise Backup Solution client Veritas Volume Manager

PLATFORM ARCHITECTURE STANDARDS:
INTEL WEB SERVERS

COMPONENT	MININUM STANDARD
Power	Redundant, UPS required if not EOC-resident
Fault Tolerance/Disk Configuration	Operating System Drives — Raid 1 (Mirrored) Data/Application Drives — Raid 5 (if not utilizing SAN)
CPU's	Dual 866 MHz
Interface Cards	Dual Ethernet 100 Base T
Operating System(s)	Windows 2000 Advanced Server
Monitor	17" SVGA Color for non-EOC sites Not required if ETC resident
Minimum RAM	2 GB
Additional Hardware Requirements	Rack mountable Rails, if EOC resident Raid Controller, 64 MB Cache Minimum 3 Open Slots to facilitate system expansion HBAs
3rd Party Software Requirements	Internet Information Server (latest release) Norton Anti-Virus, Enterprise Edition
Maintenance	3 Year 24/7, 4 hour on-site, parts & labor included
Pre-Install Option (s)	None
Preferred Manufacturer	Dell
Storage and Backup Hardware/Software	TSM Enterprise Backup Solution clinet TDP for Oracle or SQLServer Veritas Volume Manager if EOC resident Veritas Backup Exec if server connection to EOC does not have acceptable throughput

PLATFORM ARCHITECTURE STANDARDS:
UNIX DATABASE SERVERS (Including GIS)[2]

COMPONENT	MININUM STANDARD
Power	Redundant, UPS required if not EOC-resident
Fault Tolerance/Disk Configuration	Raid 1 (Mirrored) — Root Volume Group Database/Application Drives — Raid 5 (if not utilizing SAN)
CPU's	Database/Application specific (# of users, records, business area, etc.)
Operating System (Version, Type)	AIX (latest version) Solaris (latest version)
Monitor	Serially connected Monochrome
Minimum RAM	Database/Application Specific (# of users, business area, etc.)
Network Interface Cards	Dual Ethernet 100 BASE-T A modern and analog line are required for support if the server is located at remote site
3rd Party Software Requirements	IN/A
Storage and Backup Hardware/Software	TSM Enterprise Backup Solution client TDP for Oracle or SQL Server Veritas Volume Manager
Pre-Install Option (s)	Operating System pre-install option
Additional Hardware Requirements	Internal Tape Drive for root volume backup TSM Enterprise Backup Solution for data. RAID Controller HBAs
Maintenance	Must add to County IBM/SUN hardware & software contracts
Preferred Manufacturer	IBM, SUN

[2] Represents MINIMUM UNIX Database Server Standards, additional components and/or more robust versions of standard ccomponents may be required depending on the business area, application and database the server will support.

PLATFORM ARCHITECTURE STANDARDS:
ENTERPRISE SERVER (MAINFRAME)

COMPONENT	MININUM STANDARD
CPU	IBM 9672-R26 Cmos Parallel Channels - 17 ESCON Channels - 46 FICON Channels - 2 1 OSA channel
Disk Subsystem	SAN (Hitachi 9600)
Tape Subsystem	IBM 3494 Automated Tape Library IBM 3590E, 3480 IBM 3420 Reel
Memory	3GB Real & Expanded
Operating System	OS/390 2.10, migrating to z/OS
Backup Hardware/Software	OS/390 DFSMS ABARS

DATABASE & APPLICATION ARCHITECTURE STANDARDS:
ENTERPRISE SERVER (i.e. MAINFRAME)

COMPONENT	MININUM STANDARD
Software/Development Tools	Cobol CICS, TSO, JCL Visual Basic Power Builder ASP, C++, REXX
Database\File Access Method	DB2 VSAM
Ad-hoc Report Tools	Crystal Reports, SAS, EASYTRIEVE PLUS
Workstation Requirements	Mainframe 3270 Emulation Software/ TCP/IP Connectivity
Middleware	web Methods
Scheduler	CA7 DFSMS, ABARS

DATABASE & APPLICATION ARCHITECTURE STANDARDS:
SERVERS with > Five Concurrent Users

COMPONENT	MININUM STANDARD
Database Software	Oracle (latest release) Microsoft SQL Server 2000
Configuration	WEB Enabled PKI Enabled
Mode	See DIT Oracle Standards Documentation
Software/DevelopmentTools	.NET, PowerBuilder, Visual Basic
Scheduler	CRON, AT
Ad-hoc Report Tools	Crystal Reports, SAS
Workstation Requirements	Oracle Client Suite

SERVERS with < Five Concurrent Users

COMPONENT	MINIMUM STANDARD
Database Software	Access XP
Software/Development Tools:	Access, PowerBuilder, Visual Basic, Cobol
Workstation Requirements	ODBC Drivers
Ad-hoc Report Tools	Crystal Reports
Scheduler	CA7, AT, CRON

DATABASE & APPLICATION ARCHITECTURE STANDARDS:
INTERNET/INTRANET

COMPONENT	MINIMUM STANDARD
Software	Index Server (w/ PDF filter) Active Server pages 2.0 ListServ (Email) Neon Systems Shadow Direct ODBC Client CA VisualExpress ODBC Client Powerbuilder Web.PB Enterprise Monitor 5.0 WebTrends CA VisualExpress ODBC client Windows Load Balancing System
Development Tools	Visual Interdev Homesite 4.0 Visual Basic 6.0 Visual Studio
Workstation Requirements —	Microsoft Internet Explorer (latest release)

DATABASE & APPLICATION ARCHITECTURE STANDARDS: GIS

COMPONENT	MINIMUM STANDARD
Software/Development Tools	Arc/Info 8.0.2 ArcView 3.2 ArcExplore 3.0 Map Objects 2.0 Map Objects Light 1.0 Map Objects Internet Map Server 2.0 Arc Internet Map Server 3.0 ArcSDE 8.0 Visual Basic
Database Software	Oracle 8.8.0.5, 8.1.7
Workstation Requirements	Terminal Server Client, Citrix Metaframe Client/Active X Plugin

PLATFORM ARCHITECTURE STANDARDS:
DESKTOPS

COMPONENT	MINIMUM STANDARD	High End/POWER
Power	Single	Single
CPU	Pentium 1 GHz	Pentium 2 GHz, Expandable to support dual CPU's, 48X CD ROM
Disk Configuration	20 GB Hard Drive, 3.5 Floppy , 24/48X CD-ROM	80 GB SCSI , 10,000 rpm Hard Drive, 3.5 Floppy, 48X CD-Rom
Minimum RAM	1 128MB DIMMS, expandable	512 MB expandable
Monitor	17" SVGA, High Resolution, Flat	21" SVGA, High Resolution, Diamond Fire GL1 (Graphics Card)
Interface Card(s)	Ethernet 10/100 Base- T	Ethernet 10/100 Base-T
Operating System	Windows 2000	Windows 2000 Pro
Maintenance	3 Year on-site, next business day	3 Year on-site, next business day
Additional Hardware Requirements	Sound Card, 2 USB Ports UL Approved Surge Processor (new)	Sound Card, 2 USB Ports UL Approved Surge Protector Additional Slots to support hard drive & RAM expansion
Third Party Software	Norton Anti Virus, Enterprise Edition Microsoft Internet Explorer (current release) Mainframe 3270 Emulation software or TCP/IP Connectivity MS Office XP MS Outlook MS SMS Client	Norton Anti Virus, Enterprise Edition Microsoft Internet Explorer (current release) Mainframe 3270 Emulation software or TCP/IP Connectivity MS Office Suite XP MS Outlook MS SMS client
Pre-Install Options	All components (hardware) installed	All components (standard & additional) installed
Preferred Manufacturer	Dell	Dell
Backup Hardware/Software	Network, server based (if attached to server)[3] ZIP DRIVE (if stand-alone, or frequent off-site usage/storage of files)	Network, server based (if attached to server)[3] ZIP DRIVE (if stand-alone, or frequent off-site usage/storage of files)
Optional Items as required for business need	CD-RW DVD Speakers Head phones Additional memory Additional hard drive	CD-RW DVD Speakers Head phones Additional memory Additional hard drive

[3] All mission critical files must be back up to either a LAN server or ZIP Drive.

PLATFORM ARCHITECTURE STANDARDS:
LAPTOPS

COMPONENT	MININUM STANDARD
Power	Single
Disk Requirements	20GB Hard Drive, 24X CD-ROM, 3.5" Floppy
CPU	Pentium 1 GHz Standard
Operating System	Windows 2000
Minimum RAM	256 MB
Monitor	Active/Passive Matrix (Dependent on Laptop-resident applications)
Additional Hardware Requirements	Xircom Combo (Modem & Ethernet) PC CARD, Backup Battery (in addition to default) Docking Station (required, if used as desktop) UL-Approved surge protector (optional, if used as desktop) Security Loci
3rd Party Software Requirements	Norton AntiVirus Microsoft Internet Explorer 5.0 MS OFFICE Suite XP Mainframe 3270 Emulation software MS OWA (Outlook Web Access), MS Outlook (if used as desktop) MS SMS client
Preferred Manufacturer	Dell
Backup Hardware/Software	Network, server based (if attached to server) ZIP DRIVE (if stand-alone)
Maintenance	3 Year, on-site, Next Business Day
Pre-Install Options	None
Optional Items as required for business need	CD-RW, DVD, Head phones, Additional Memory Additional Hard Drive

PLATFORM ARCHITECTURE STANDARDS:
HAND HELDS (PDA)

COMPONENT	MININUM STANDARD
Preferred Manufacturer	Palm; Blackberry
Operating System	Palm OS Software
Display	Active Matrix TFT Color Screen
HW Config	16MB RAM; 20 MB Hard Disk
Software Compatibility	Outlook Exchange (downloadable) Date Book, Address Book, To Do List, Memo Pad, Calculator
Connectivity	TCP/IP Internet or modem enabled

PRODUCTIVITY SOFTWARE STANDARDS

COMPONENT	MININUM STANDARD
Spreadsheet	Microsoft Excel XP
Wordprocessor	Microsoft Word XP
Presentation	Microsoft PowerPoint XP Visio 2002
Database	Access XP (less than 5 users) Microsoft SQL Server 2000 (more than 5 users)
E-mail, Calendar	Microsoft Outlook XP
Project Management	Microsoft Project 2000
Web Browser	Microsoft Internet Explorer (latest release)
Mainframe Connectivity	Mainframe 3270 Emulation Software OR TCP/IP Connectivity

SECURITY ARCHITECTURE STANDARDS

ARCHITECTURE	MINIMUM STANDARD
Enterprise Servers	OS/390 Secure Way Security Server RSA Secure ID Token/Ace Server
Intel Servers	Windows NT Internal Security System Norton Anti virus RSA Secure ID Token/Ace Server
RISC Servers	
	AIX Internal Security System RSA Secure ID Token/Ace Server
Intel Web Servers	Windows NT Internal Security System RSA Secure ID Token/Ace Server
Application & Database	OS 390/ Secure Way Security Server Internal Application Security System Internal Database Security System

DATA COMMUNICATIONS NETWORK ARCHITECTURE STANDARDS:
> 15 USER SITES

COMPONENT	MININUM STANDARD
Wiring	Twisted Pair, CAT 5
Hub	3-Com (> 15 user sites)
Router	Cisco
Switch	Cisco
Topology	Ethernet
Protocol	TCP/IP
Circuit Type	Frame Relay, ATM
Network Security	CISCO PIX Firewall
Network Management	IBM NetView IBM Tivoli CISCO WORKS 2000

Network Interface Cards (NIC)

- Ethernet on the Mother Board.

- Primary NIC is 3COM. The exact make and model is determined by the end-station standard. This is the standard for all media.

- Secondary NIC is IBM. The exact make and model is determined by the end-station standard. This is a backup product in case of difficulty with the availability of the primary NIC or special end-node requirements.

- Laser Printer NIC is HP Jet Direct for all IP-addressable printers.

Cabling Standards

Structured cabling based on the ANSI/TIA/EIA and ISO standards.

Horizontal (cabling and pathways):

- Current — CAT5 UTP and SCTP

- Future — CAT5e UTP and SCTP

Between Building Backbone (dependent on distance) 12 strand "sm" OFNP, single mode optical fiber.

- 62.5/125 OFNP multi-mode optical fiber.

- Investigating wireless between buildings and within certain areas of buildings.

At Outlet

CURRENT:

■ Type 1 cabling — Siemens 3 outlet modular faceplates with color-coded inserts to identify the media being used in each outlet. Voice and data are terminated at the same faceplate. Bottom jack supports UTP Impedance Matching Device. (being phased out)

■ Category 5 cabling — Siemens 4 outlet modular faceplates with color-coded inserts to identify the media being used in each outlet. Voice and data terminated at the same faceplate.

FUTURE:

■ Category 5e cabling — Siemens 4 outlet modular faceplates with color-coded. Voice and data terminated at the same faceplate.

County's Networking Standards

The following IEEE standards are used at Fairfax County Government:

IEEE 802.1D — Standard for interconnecting LANs using MAC bridges.

IEEE 802.1E — Standard for LAN and MAN system load protocols.

IEEE 802.1F — Standard for defining management information specified in IEEE 802.

IEEE 802.1J — Standard for LAN connectivity using MAC bridges (supplement to 802.1D).

IEEE 802.1K — Standard for LAN and MAN networks discovery and dynamic control of event forwarding.

IEEE 802.2 — Standard for logical link control in LAN and MAN connectivity, mainly using bridges.

IEEE 802.3 — Standard for CSMA/CD access method and physical layer.

IEEE 802.5 — Standard for Token-ring access method and physical layer.

IEEE 802.9 — Standard for LAN interfaces at MAC and physical layers.

IEEE 802.5J — Standard for Token-ring access method using fiber optic stations.

IEEE 802.1G — Proposed standard for remote MAC bridging approved in 1995.

IEEE 802.1M — Conformance statement to 802.1E addressing the managed-object definitions and protocols for system load protocol.

IEEE 802.1H — Recommended practices for MAC bridging of Ethernet 2.0 LANs.

IEEE 802.1P — Proposed standard for LANs and MANs that addresses expediting traffic and multicast filtering using MAC bridges.

IEEE 802.1Q — Proposed standard for virtual bridged LANs.

Network Protocols

CURRENT:
- TCP/IP
- IPX/SPX
- SNA (DLSW)
- EIGRP
- OSPF
- RIP

FUTURE:
- TCP/IP only

Fairfax County Internet/Intranet Architecture
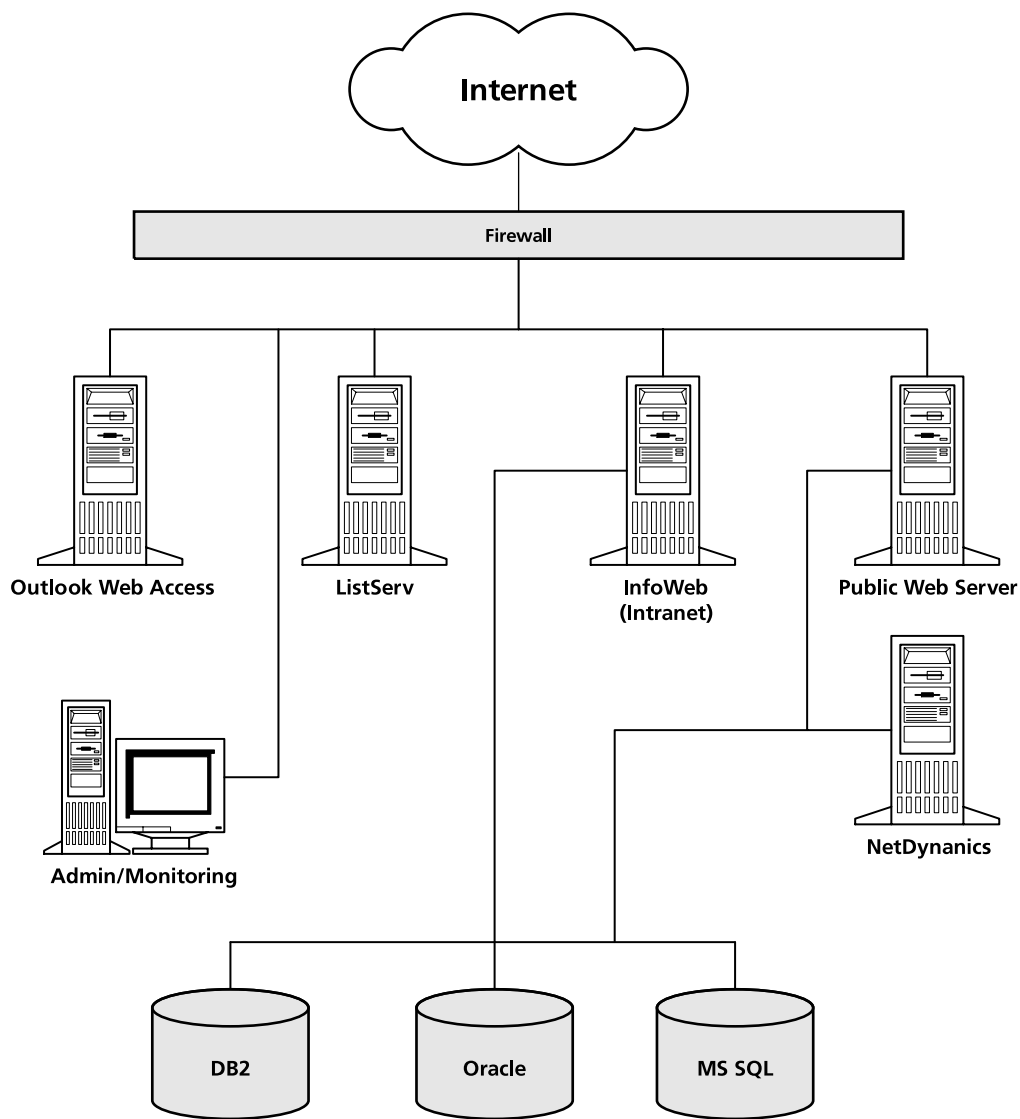
Server Hardware
Dell PowerEdge Servers
Dell PowerVault Fibre Channel Storage Array

Software
Windows NT 4.0 Server (Win2K Planned)
Information Server 4.0 (IIS 5.0 planned)
Index Server 2.0
Active Server Pages 3.0
ListServ
NetDynamics 4.13 (legacy)
PowerBuilder Web.PB
Enterprise Monitor 5.0
Statistics Server 5.0
Neon Systems Shadow Direct ODBC
CA Visual Express ODBC

Development Tools
MacroMedia Dreamweaver 4.0
MS Visual InterDev
Adobe Photoshop 6.0
Visual Basic 6.0
NetDynamics Studio (legacy)

*Load Balancing, Server Farms and MTS
architectures planned for Fiscal Year 2002